



bioavailability and pharmacokinetics of cocaine hydrochloride via insufflation vs intrarectal

Cocaine hydrochloride shows distinct bioavailability and pharmacokinetic profiles when administered via insufflation (snorting) versus intrarectal routes, based on available pharmacological data. Insufflation typically offers higher and faster systemic absorption compared to rectal administration.

Insufflation Pharmacokinetics

Insufflation of cocaine hydrochloride achieves a bioavailability of approximately 60-80%. Peak plasma concentrations occur within 10-50 minutes, with rapid initial absorption (half-time around 11.7 minutes) and an elimination half-life of about 75 minutes. This route bypasses significant first-pass metabolism, leading to quicker onset of effects.^{[1] [2] [3]}

Intrarectal Pharmacokinetics

Direct data on intrarectal cocaine hydrochloride is limited, but rectal administration generally mirrors oral pharmacokinetics for many drugs due to partial avoidance of first-pass metabolism via lower rectal veins. Oral cocaine (analogous for comparison) has lower bioavailability around 30-45%, with peak plasma levels at 45-90 minutes and a shorter elimination half-life of 48 minutes. Rectal use may yield slightly higher bioavailability (potentially 40-60%) than oral but slower absorption than insufflation.^{[1] [4] [5] [6]}

Key Comparison

Parameter	Insufflation	Intrarectal (Estimated/Proximal to Oral)
Bioavailability	60-80% ^{[2] [3] [7]}	30-60% ^{[4] [5] [6]}
Tmax (Peak Time)	10-50 min ^{[1] [3]}	45-90 min ^{[5] [6]}
Absorption Speed	Rapid (t _{1/2} ~12 min) ^[2]	Slower ^[1]
Elimination t _{1/2}	~75 min ^[1]	~48 min ^[1]

Insufflation provides faster effects due to nasal mucosal absorption, while intrarectal may offer prolonged but less intense delivery.^[5]



1. <https://pubmed.ncbi.nlm.nih.gov/7357795/>

2. <https://pubmed.ncbi.nlm.nih.gov/2565204/>

3. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9032145/>
4. https://www.benchchem.com/pdf/A_Comparative_Analysis_of_Oral_versus_Intravenous_Cocaine_Administration_and_Metabolite_Formation.pdf
5. <https://pubmed.ncbi.nlm.nih.gov/10954344/>
6. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5952935/>
7. https://taylorandfrancis.com/knowledge/Medicine_and_healthcare/Pharmaceutical_medicine/Cocaine_hydrochloride/
8. <https://pure.johnshopkins.edu/en/publications/pharmacokinetics-and-pharmacodynamics-of-cocaine-3>
9. https://www.reddit.com/r/askscience/comments/1akvmx5/how_does_cocaine_work/
10. <https://scholars.uky.edu/es/publications/bioavailability-and-pharmacokinetics-of-oral-cocaine-in-humans/>